

REMARKS/ARGUMENTS

Applicant responds herein to the Office Action dated November 16, 2006.

Applicant thanks the Examiner for acknowledging review and consideration of the references cited in the Information Disclosure Statement filed on August 29, 2005.

The Specification was objected under 35 U.S.C. §132(a) as introducing new matter into the disclosure. The specification has been amended to comply with the Examiner's request. In view of the foregoing amendments, withdrawal of the objection to the specification is respectfully requested.

Claims 11-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Namiki (2001/0050802), in view of Pedersen (2002/0167719), Lauder (2002/0109896), and Hempstead (2002/0118447). Reconsideration of the rejection is respectfully requested.

According to the present application, as recited by the claims, an optical transmission system includes first and second light sources for Raman amplification. The first and second light sources are used to amplify transmitted signal light. As recited by claim 1, only the second light source includes spare pumping light sources, which are operated to restore deteriorated light which was amplified by the first light source. Accordingly, independent claim 11 has been amended to provide, in part, for "providing one or more spare pumping light sources only in said plurality of second light sources for Raman amplification, the number of said second light sources being less than the number of said first light sources, a number of said first light sources not having spare pumping light sources, intervening between two of said second light sources being determined by a permissible failure rate of the optical transmission system; detecting a deteriorated state of said signal light amplified by one or more of said first sources for Raman amplification; and restoring said deteriorated signal light to an un-deteriorated state by emitting spare pumping light from at least one of said spare pumping light sources, said spare pumping light sources being operated only when required to restore deteriorated signal light", which is neither taught, disclosed, or suggested by Namiki, Pedersen, Lauder, and/or Hempstead, which are described below.

Namiki teaches a Raman amplification system. However, Namiki does not teach or suggest using redundant or spare amplifiers. Hempstead discloses a system and method for enabling hot-swapping of optical amplifier pumps from an onboard optical fiber system during operation of the system. In other words, Hempstead teaches swapping out a failed on-board pump for another pump.

Lauder teaches a continuous wave laser subsystem in which laser sources are removed from the interface cards so that the interface cards are wavelength independent. Similarly to Hempstead, Lauder teaches in the event of a failure, hot-swapping a failed pump so that it can be replaced.

Pedersen teaches an optical amplifier having redundancy and P inputs and V outputs in which P and V are integers >1 and that the magnitude of each radiation profile delivered by each of the V outputs has $1/V$ power of the combined radiation profile provided to its inputs. Accordingly, output of in input pump is less than or equal to a maximum of $1/2$ of the magnitude of its input. This teaches away from the present invention. Moreover, with respect to Fig. 4, Pedersen teaches that each amplifier may be equipped with one or more spare pump sources for redundancy (e.g., see, fourth pump 526 in Fig 4). However, Pedersen teaches the fourth pump (i.e., redundant) pump is turned on to compensate for the loss of the third pump source (226) in the same optical amplifier. In other words, Pedersen teaches providing a redundant pump in an amplifier and operating the redundant pump when a pump in the same amplifier has failed.

Independent claim 16 includes similar recitations as those contained in claim 11 and is patentably distinct for at least the same reasons recited above with respect to the allowability of claim 11. Claims 12-15 are directly dependent upon independent claim 11, each of claims 12-15 is allowable over Namiki, Pedersen, Lauder, and Hempstead for at least the same reasons recited above with respect to the allowability of independent claim 11 over Namiki, Pedersen, Lauder, and Hempstead.

Applicant thanks the Examiner for the opportunity to discuss this application during the interview on January 19, 2007. In view of the foregoing amendments and remarks, allowance of claims 11-16 is respectfully requested.

Accordingly, the Examiner is respectfully requested to reconsider the application, allow the claims as amended and pass this case to issue.

THIS CORRESPONDENCE IS BEING
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Respectfully submitted



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